WEST

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Search Results -

Terms	Documents
(((707/1)!.CCLS.))	2175

Database:
US Patents Full-Text Database
US Pre-Grant Publication Full-Text Database
JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Search: Refine Search

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Search History

DATE: Wednesday, February 19, 2003 Printable Copy Create Case

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L17	(((707/1)!.CCLS.))	2175	L17
L16	L15 and geocod$ near3 database	8	L16
L15	(((701/208)!.CCLS.))	825	L15
L14	(((701/207)!.CCLS.))	1017	L14
L13	(((701/$)!.CCLS.))	23551	L13
L12	(((707/104.1)!.CCLS.))	2126	L12
L11	(((707/7)!.CCLS.))	584	L11
L10	(((707/5)!.CCLS.))	1052	L10
L9	(((707/6)!.CCLS.))	878	L9
L8	((707/4)!.CCLS.)	1199	L8
L7	L3 and geocoded near5 database	6	L7
L6	L5 and geocoded near5 database	0	L6
L5	(((709/217)!.CCLS.))	1747	L5
L4	(((709/$)!.CCLS.))	22975	L4
L3	(((707/$)!.CCLS.))	14400	L3
L2	(((707/10)!.CCLS.))	2722	L2
L1	((707/3)!.CCLS.)	2513	L1

END OF SEARCH HISTORY

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Search Results -

Terms	Documents
(((705/$)!.CCLS.))	18346

Database:
US Patents Full-Text Database
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JPO Abstracts Database
EPO Abstracts Database
Derwent World Patents Index
IBM Technical Disclosure Bulletins

Search: L20

Refine Search

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Search History

DATE: Wednesday, February 19, 2003 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR			
L20	(((705/$)!.CCLS.))	18346	L20
L19	(((705/10)!.CCLS.))	840	L19
L18	((705/62)!.CCLS.)	58	L18
L17	(((707/1)!.CCLS.))	2175	L17
L16	L15 and geocod$ near3 database	8	L16
L15	(((701/208)!.CCLS.))	825	L15
L14	(((701/207)!.CCLS.))	1017	L14
L13	(((701/$)!.CCLS.))	23551	L13
L12	(((707/104.1)!.CCLS.))	2126	L12
L11	(((707/7)!.CCLS.))	584	L11
L10	(((707/5)!.CCLS.))	1052	L10
L9	(((707/6)!.CCLS.))	878	L9
L8	((707/4)!.CCLS.)	1199	L8
L7	L3 and geocoded near5 database	6	L7
L6	L5 and geocoded near5 database	0	L6
L5	(((709/217)!.CCLS.))	1747	L5
L4	(((709/$)!.CCLS.))	22975	L4
L3	(((707/$)!.CCLS.))	14400	L3
L2	(((707/10)!.CCLS.))	2722	L2
L1	((707/3)!.CCLS.)	2513	L1

END OF SEARCH HISTORY

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End of Result Set

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L7: Entry 6 of 6 File: USPT Aug 8, 2000

US-PAT-NO: 6101496
DOCUMENT-IDENTIFIER: US 6101496 A

TITLE: Ordered information geocoding method and apparatus

DATE-ISSUED: August 8, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Esposito; David J.	Delmar	NY		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
MapInfo Corporation	Troy	NY			02

APPL-NO: 09/ 093259 [PALM]
DATE FILED: June 8, 1998

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/6; 379/220, 701/207, 701/208, 705/10, 705/62, 707/3, 707/4, 707/5, 707/7, 707/104
US-CL-CURRENT: 707/6; 701/207, 701/208, 705/10, 705/62, 707/104.1, 707/3, 707/4, 707/5, 707/7

FIELD-OF-SEARCH: 707/3-8, 707/104, 707/530, 707/532, 701/207-208, 705/10, 705/62, 379/220

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected | Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4827419	May 1989	Selby, III	707/104
☐	4839700	June 1989	Ramesham et al.	357/2
☐	4879658	November 1989	Takashima et al.	701/207
☐	4888699	December 1989	Knoll et al.	701/207
☐	4982332	January 1991	Saito et al.	701/208
☐	4989151	January 1991	Nuimura	701/207
☐	5133052	July 1992	Bier et al.	707/530
☐	5210868	May 1993	Shimada et al.	701/200
☐	5381338	January 1995	Wysocki et al.	701/207
☐	5426780	June 1995	Gerull et al.	707/3
☐	5448696	September 1995	Shimada et al.	345/357
☐	5470233	November 1995	Fruchterman et al.	434/112
☐	5487139	January 1996	Saylor et al.	345/435
☐	5506897	April 1996	Moore et al.	379/127
☐	5532838	July 1996	Barbari	358/400
☐	5533107	July 1996	Irwin et al.	379/201
☐	5546578	August 1996	Takada	707/5
☐	5553407	September 1996	Stump	37/348
☐	5568384	October 1996	Robb et al.	707/532
☐	5594650	January 1997	Shah et al.	701/207
☐	5634049	May 1997	Pitkin	707/102
☐	5636122	June 1997	Shah et al.	701/207
☐	5646629	July 1997	Loomis et al.	701/300
☐	5794178	August 1998	Caid et al.	704/9
☐	5901214	May 1999	Shaffer et al.	379/220
☐	5982868	November 1999	Shaffer et al.	379/220

OTHER PUBLICATIONS

Fiset, R. et al., "An automatic road extraction method using a map-guided approach combined with neural networks for cartographic database validation purposes", International Geoscience and Remote Sensing Symposium, May 1996. IGARSS '96. Remote Sensing for.
Kamijo, S. et al., "Digital road map database for vehicle navigation and road information systems", Conference Record Vehicle Navigation and Information System Conference, Sep. 11-13, 1989, pp. 319-323.
Kawamura, H. et al., "N-land database for research of the Japanese land and coastal are with complicated geographical features", International Geoscience and Remote Sensing Symposium, IGARSS '93. Better Understanding of Earth Environment, Aug. 18-21, 1993.
Silberschatz, A. et al., "Operating System Concepts", Addison-Wesley Publishing Company, Inc., Fourth Edition, Jan. 1995, ISBN 0-201-50480-4, Chapter 3, sections 3.3.3 and 3.3.5, pp. 72-73.
Suter, M. et al., "Automated generation of visual simulation databases using remote sensing and GIS", Proceedings, IEEE Conference on Visualization, 1995. Visualization '95., Oct. 29-Nov. 3, 1995, pp. 86-93.
Sweeney, I.E., Jr., "Comparative benefits of various automotive navigation and routing technologies", IEEE 1996 Position Location and Navigation Symposium, Apr. 22-26, 1996, pp. 415-421.

ART-UNIT: 271

PRIMARY-EXAMINER: Black; Thomas G.

ASSISTANT-EXAMINER: Alam; Shahid

ABSTRACT:

Ordered information data 22 is combined with prior geocoded data 21 to improve geocoding. The combined records are sorted by precision 33. The two highest precision groups are interpolated to further geocode the records and provide enhanced street address products 42.

29 Claims, 13 Drawing figures

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Search Results -

Terms	Documents
L8 and anchor same point	0

Database:
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Search History

DATE: Wednesday, February 19, 2003 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR		
L9	L8 and anchor same point	0	L9
L8	L7 and satellites	11	L8
L7	geocoded near5 database or geocoded near5 data with base	28	L7
L6	L5 and globe	7	L6
L5	l3 and map	46	L5
L4	L3 and globe	8	L4
L3	L2 and anchor near3 point	61	L3
L2	L1 and satellite	19492	L2
L1	database or data with base	335555	L1

END OF SEARCH HISTORY

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L8: Entry 8 of 11 File: USPT Jul 24, 2001

US-PAT-NO: 6266612
DOCUMENT-IDENTIFIER: US 6266612 B1

TITLE: Position based personal digital assistant

DATE-ISSUED: July 24, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Dussell; William O.	Pescardero	CA		
Janky; James M.	Los Altos	CA		
Schipper; John F.	Palo Alto	CA		
Cowl; David J.	Sunnyvale	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Trimble Navigation Limited	Sunnyvale	CA			02

APPL-NO: 09/ 334521 [PALM]
DATE FILED: June 16, 1999

PARENT-CASE:
RELATED APPLICATION This application is a Continuation of application Ser. No. 08/738,938 filed Oct. 24, 1996, now U.S. Pat. No. 5,938,721 issued Aug. 17, 1999.

INT-CL: [07] G01 S 5/02

US-CL-ISSUED: 701/207; 701/211, 701/213, 342/357.17
US-CL-CURRENT: 701/207; 342/357.17, 701/211, 701/213

FIELD-OF-SEARCH: 701/211, 701/213, 701/1, 701/207, 342/357.06, 342/357.1, 342/357.17

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected | Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5032083	July 1991	Friedman	434/112
☐	5311194	May 1994	Brown	342/357
☐	5444444	August 1995	Ross	340/994
☐	5457629	October 1995	Miller et al.	364/424.01
☐	5470233	November 1995	Fruchterman et al.	434/112
☐	5528248	June 1996	Steiner et al.	342/357
☐	5559707	September 1996	DeLorme et al.	364/443
☐	5576687	November 1996	Blank et al.	340/438
☐	5646629	July 1997	Loomis et al.	342/357
☐	5682525	October 1997	Bouve et al.	395/615
☐	5699244	December 1997	Clark, Jr. et al.	364/420
☐	5732074	March 1998	Spaur et al.	370/313
☐	5790974	August 1998	Tognazzini	701/204

ART-UNIT: 361

PRIMARY-EXAMINER: Zanelli; Michael J.

ABSTRACT:

A task description is stored in a database accessible by a mobile computer system. The mobile computer system receives positioning information corresponding to its geographic location and indexes the database based on the positioning information when the information indicates that the mobile computer system is in a geographic location that facilitates completion of a task associated with the task description. The database may be resident in the mobile computer system or accessible in other ways, for example, via the Internet. The task description preferably includes a geocode which corresponds to the geographic location at which completion of the task may be facilitated. The task description may also include textual, voice or other message which can be displayed and/or played back to a user. The positioning information may be obtained from a GPS satellite, a GLONASS satellite or a pseudolite. The mobile computer system may be a portable unit, such as a PDA, or integrated within a vehicle.

36 Claims, 2 Drawing figures

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L8: Entry 8 of 11 File: USPT Jul 24, 2001

DOCUMENT-IDENTIFIER: US 6266612 B1
TITLE: Position based personal digital assistant

Abstract Text (1):
A task description is stored in a database accessible by a mobile computer system. The mobile computer system receives positioning information corresponding to its geographic location and indexes the database based on the positioning information when the information indicates that the mobile computer system is in a geographic location that facilitates completion of a task associated with the task description. The database may be resident in the mobile computer system or accessible in other ways, for example, via the Internet. The task description preferably includes a geocode which corresponds to the geographic location at which completion of the task may be facilitated. The task description may also include textual, voice or other message which can be displayed and/or played back to a user. The positioning information may be obtained from a GPS satellite, a GLONASS satellite or a pseudolite. The mobile computer system may be a portable unit, such as a PDA, or integrated within a vehicle.

Brief Summary Text (5):
The GPS utilizes signals transmitted by a number of in-view satellites to determine the location of a GPS antenna which is connected to a receiver. Each GPS satellite transmits two coded L-band carrier signals which enable some compensation for propagation delays through the ionosphere. Each GPS receiver contains an almanac of data describing the satellite orbits and uses ephemeris corrections transmitted by the satellites themselves. Satellite to antenna distances may be deduced from time code or carrier phase differences determined by comparing the received signals with locally generated receiver signals. These distances are then used to determine antenna position. Only those satellites which are sufficiently above the horizon can contribute to a position measurement, the accuracy of which depends on various factors including the geometrical arrangement of the satellites at the time when the distances are determined.

Brief Summary Text (6):
Distances measured from an antenna to four or more satellites enable the antenna position to be calculated with reference to the global ellipsoid WGS-84. Local northing, easting and elevation coordinates can then be determined by applying appropriate datum transformation and map projection. By using carrier phase differences in any one of several known techniques, the antenna coordinates can be determined to an accuracy on the order of .+-.1 cm.

Brief Summary Text (10):
The database may be resident in the mobile computer system or accessible in other ways, for example, via the Internet. The task description preferably includes a geocode which corresponds to the geographic location at which completion of the task may be facilitated. The task description may also include textual, voice or other messages which can be displayed and/or played back to a user. The positioning information may be obtained from a GPS satellite, a GLONASS satellite or a pseudolite. The mobile computer system may be a portable unit, such as a PDA, or integrated within a vehicle.

Brief Summary Text (11):
A second embodiment provides a computer assisted method of using a geocoded database. In this embodiment, a mobile computer system is transported to a first location having first geographic coordinates at a first time. At the first location, RF signals which contain information indicative of the location of a source of their transmission are received and processed to derive the geographic coordinates of the first location. The geographic coordinates of the first location are associated with a descriptor indicative of the first location in a database associated with the mobile computer system so as to form a geocoded entry in the database and a task to be accomplished at the first location is similarly associated with the geocoded

entry in the database.

Detailed Description Text (6):
In yet other embodiments, elements of digital system 5 may form an integrated system within a vehicle, aircraft, boat or other mobile unit and database 10 may be stored within a memory device housed in a PC Card or on another transportable computer readable media such as a disk or CD ROM. Database 10 is preferably a geocoded database and will be described in further detail below. In some cases, mobile computer system 20 may share some circuitry with location determination unit 30. For example, the two units may share a digital signal processor or other microprocessor which performs the computations required to derive the geographic location of the digital system 5 (i.e., antenna 32) using signals transmitted by GPS satellites or other sources (e.g., GLONASS satellites and/or pseudolites).

Detailed Description Text (14):
Second, the GPS data can be provided at a central server, and any device (such as mobile computer system 20) requiring such data can address a data request to the GPS server. The server then packages the requested data in a packet, frame or other suitable format and sends the packaged data directly to the requesting device, using the bus. This approach may be more flexible in that it (1) allows a client to request and promptly receive GPS data and non-GPS data, (2) allows data to be requested and received only when such data is needed, rather than transporting all data on the bus as soon as such data is available, regardless of need, and (3) provides such data in more convenient formats for individual client use. Related GPS data may include GPS receiver health, GPS receiver correction status, vehicle tracking status and other similar information. Information can also be provided to, and stored on, the server to improve or correct the GPS receiver performance. Such information may include real time clock information, to reduce the time required for initial acquisition or reacquisition of GPS satellite signals, and may include DGPS correction data to improve the accuracy of real time determination of vehicle present location. Such DGPS correction data may be obtained from a variety of commercial or other sources using well-known radio-based communications links such as FM subcarriers, private or packet radio links to private servers or servers accessed through the Internet or other cellular phone links.

Detailed Description Text (15):
Location determination unit 30 has an associated antenna 32 for receiving signals from GPS satellites and/or other sources of GPS signals (e.g., pseudolites, FM subcarriers, etc.) Antenna 32 provides the received signals to Receiver (Rx) Front-end 34 where the signals are downconverted and often digitized for further processing by GPS Processor 36.

Detailed Description Text (16):
The manner in which GPS processing is accomplished is well known in the art. Briefly, GPS receivers normally determine their position by computing relative times of arrival of signals transmitted simultaneously from a multiplicity of GPS satellites. These satellites transmit, as part of their message, both satellite positioning data as well as data on satellite clock timing and "ephemeris" data for each satellite. Using this data, the GPS receiver computes pseudoranges which are simply the time delays measured between the received signal from each satellite and a local clock.

Detailed Description Text (17):
Many GPS receivers utilize correlation methods to compute pseudoranges. GPS signals contain high rate repetitive signals called pseudorandom (PN) sequences. The codes available for civilian applications are called C/A codes, and have a binary phase-reversal rate, or "chipping" rate, of 1.023 MHz and a repetition period of 1023 chips for a code period of 1 msec. The code sequences belong to a family known as Gold codes. Each GPS satellite broadcasts a signal with a unique Gold code. For a signal received from a given GPS satellite, following the downconversion process to baseband, a correlation receiver multiplies the received signal by a stored replica of the appropriate Gold code contained within its local memory, and then integrates, or lowpass filters, the product in order to obtain an indication of the presence of the signal. This process is termed a "correlation" operation. By sequentially adjusting the relative timing of this stored replica relative to the received signal, and observing the correlation output, the receiver can determine the time delay between the received signal and a local clock. The initial determination of the presence of such an output is termed "acquisition." Once acquisition occurs, the process enters the "tracking" phase in which the timing of the local reference is adjusted in small amounts in order to maintain a high correlation output. The correlation output during the tracking phase may be viewed as the GPS signal with the pseudorandom code removed, or, in common terminology, "despread." This signal is narrow band, with bandwidth commensurate with a 50 bit per second binary phase shift

keyed data signal which is superimposed on the GPS waveform.

Detailed Description Text (20):
As mentioned above, database 10 is preferably a geocoded database. This term is best understood with reference to the manner in which digital system 5 is used by an operator. Typically, mobile computer system 20 will store various application programs, including a scheduling program which allows an operator to store reminders in the form of "To-Do" lists or other forms. Such scheduling programs are common in the art and often allow the user to prioritize tasks to be accomplished according to a variety of criteria, including due dates, etc. The present invention provides a means by which tasks can be scheduled and/or prioritized based on location. Tasks are assigned using a task descriptor (e.g., a text and/or voice message describing the task) and stored in database 10. Typically, the task descriptor will include a reference indicating a location at which the task is to be accomplished. This may be a set of geographic coordinates or, more typically, a name of a business or other location. To illustrate, if the task descriptor is a text message such as "PICK UP MILK", an appropriate reference might be "GROCERY STORE".

Detailed Description Text (23):
At some point, location determination unit 30 will receive and process GPS signals in the manner described above and will provide geographic location coordinates to mobile computer system 20 via interface 38. These geographic location coordinates will correspond to the geographic location of antenna 32, however, it is assumed that mobile computer system 20 is in close enough proximity to antenna 32 such that the location of antenna 32 is substantially the same as the location of mobile computer system 20. This condition will be satisfied, for example, if mobile computer system 20 is transported within the same vehicle as that on which antenna 32 is located. Antenna 32 may be a patch antenna or other antenna suitable for mounting on a vehicle and capable of receiving GPS signals transmitted by GPS satellites or pseudolites.

Detailed Description Text (24):
Once mobile computer system 20 has received the above-mentioned geographic location coordinates (or other positioning information) provided by location determination unit 30, microprocessor 21 will use this information to index database 10. Recall that database 10 contains a task description with an associated location reference (e.g., "GROCERY STORE"). The location reference will have an associated geocode, i.e., an associated set of geographic coordinates. This geocode is established at an earlier time, for example, by storing the location coordinates of the grocery store in the database 10 during an earlier trip to the store, and is associated with the location reference that goes with the task description. Thus, database 10 is a geocoded database that contains task descriptions with associated geocodes. Each time a task description is entered and associated with a location reference, a geocode (corresponding to the location reference) is automatically associated with the task description.

Detailed Description Text (26):
In the above description, the database 10 is a database programmed by the mobile computer system 20 user. However, database 10 may be provided as a unit by a commercial vendor. For example, database 10 may be sold as an "Electronic Yellow Pages" on CD ROM or other computer readable format for use by a variety of mobile computer systems 20. In such cases, database 10 may be an Internet Web Page or other resource. Regardless of its physical (or virtual) configuration, database 10 includes geocoded references for a variety of business establishments and other locations (such as historical points of interest, stadiums, theaters, etc.) and is accessible by calendaring, scheduling and/or other application programs running on mobile computer system 20.

Detailed Description Text (28):
Such a geocoded database would also be useful for a user who is new to a geographic area. For example, the user could purchase a database 10 for a particular city of interest (for example, shortly after moving to the city) and use the database to locate stores, service providers, or other locations of interest. To illustrate, suppose the user has just purchased a database 10 for ANY CITY and wants to locate the nearest hardware store (to buy items for his or her new home). By providing the mobile computer system 20 with current positioning information from location determination unit 30 and entering a search query via user interface 25 seeking the location of the nearest hardware store, microprocessor 21 could access database 10 based on the positioning information and retrieve and display a list of hardware stores having geocodes which show the stores to be within a predetermined range (say a mile or so) of the users current location. Upon selecting one of the stores from the list, a map (also stored on the media containing database 10) could be visually displayed showing the user's present location and the relative location of the

hardware store.

Detailed Description Text (30):
Although the methods and apparatus of the present invention have been described with reference to GPS satellites, it will be appreciated that the teachings are equally applicable to positioning systems which utilize pseudolites or a combination of satellites and pseudolites. Pseudolites are ground based transmitters which broadcast a PN code (similar to a GPS signal) modulated on an L-band carrier signal, generally synchronized with GPS time. Each transmitter may be assigned a unique PN code so as to permit identification by a remote receiver. Pseudolites are useful in situations where GPS signals from an orbiting satellite might be unavailable, such as tunnels, mines, buildings or other enclosed areas. The term "satellite", as used herein, is intended to include pseudolite or equivalents of pseudolites, and the term GPS signals, as used herein, is intended to include GPS-like signals from pseudolites or equivalents of pseudolites.

Detailed Description Text (31):
It will be further appreciated that the methods and apparatus of the present invention are equally applicable for use with the GLONASS and other satellite-based positioning systems. The GLONASS system differs from the GPS system in that the emissions from different satellites are differentiated from one another by utilizing slightly different carrier frequencies, rather than utilizing different pseudorandom codes. In this situation, substantially all the circuitry and algorithms described above are applicable, however, a receiver need only store a single PN code for use during receive operations.

CLAIMS:

7. The computer assisted method of claim 6 wherein at least one of said sources is a Global Positioning System (GPS) satellite.

9. The computer assisted method of claim 6 wherein one of said sources is a GLONASS satellite.

21. A computer assisted method of using a geocoded database, comprising the steps of:

transporting a mobile computer system to a first location having first geographic coordinates at a first time;

receiving and processing at said mobile computer system a first set of RF signals including pseudorandom sequences containing information indicative of the location of a source of said first set of RF signals to derive said first geographic coordinates;

associating said first geographic coordinates with a descriptor indicative of said first location in a database so as to form a geocoded entry in said database; and

associating a task to be accomplished at said first location with said geocoded entry in said database.

WEST

End of Result Set

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L8: Entry 11 of 11 File: USPT Nov 28, 1995

US-PAT-NO: 5470233
DOCUMENT-IDENTIFIER: US 5470233 A

TITLE: System and method for tracking a pedestrian

DATE-ISSUED: November 28, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Fruchterman; James R.	Palo Alto	CA		
Schwegler; William C.	San Jose	CA		
Merritt; Bruce W.	Palo Alto	CA		
LaPierre; Charles	Ottawa			CA

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Arkenstone, Inc.	Sunnyvale	CA			02

APPL-NO: 08/ 210239 [PALM]
DATE FILED: March 17, 1994

INT-CL: [06] G09 B 21/00

US-CL-ISSUED: 434/112; 434/116, 434/365, 340/825.19, 340/825.49, 364/449
US-CL-CURRENT: 434/112; 340/825.19, 340/825.49, 434/116, 434/365, 701/213

FIELD-OF-SEARCH: 434/112, 434/116, 434/308, 434/365, 340/825.19, 340/825.36, 340/825.49, 364/424.01, 364/443, 364/449, 364/450, 364/460, 364/578

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected | Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	4694494	September 1987	Woolfson	434/112 X
☐	4731613	March 1988	Endo et al.	364/450 X
☐	5032836	July 1991	Ono et al.	340/825.19 X
☐	5117363	May 1992	Akiyama et al.	364/449
☐	5119301	June 1992	Shimizu et al.	364/450
☐	5189430	February 1993	Yano et al.	364/449 X
☐	5225842	July 1993	Brown et al.	342/357
☐	5343399	August 1994	Yokoyama et al.	364/449
☐	5345388	September 1994	Kashiwazaki	364/449
☐	5371497	December 1994	Nimura et al.	364/449 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
0583214	February 1994	EP	434/112

OTHER PUBLICATIONS

"Active Localization of Virtual Sounds" By Loomis et al, The Journal of the Acoustical Society of America, vol. 88, No. 4, Oct. 1990, pp. 1757-1764.
"An Interdisciplinary Concurrent Design Methodology as Applied to the Navigator Wearable Computer System" by Daniel P. Siewiorek, et al., Abstract with 3 figures, 1993.
EtakMap.RTM. database product brochure, May 1992.
"Sony Mobile Navigation System Technology Description", Sony News and Information, Feb. 8, 1994.
"Global Explorer", DeLorme Mapping Brochure, 1993.
"Better Than a Cane", Discover, Oct. 1993, pp. 20-21.

ART-UNIT: 332

PRIMARY-EXAMINER: Cheng; Joe H.

ABSTRACT:

The present invention is a global positioning system that helps a blind pedestrian navigate through a city. This system uses the Department of Defense Global Positioning System (GPS) and a Differential GPS receiver to determine a pedestrian's longitude and latitude. Once these coordinates have been determined, they are correlated with a computerized map database. The map database holds the names and coordinates of specific locations, such as intersections, in a particular region. The system of the present invention retrieves the names of locations from the map database that are near the pedestrian. These names are then output to a voice synthesizer.

27 Claims, 8 Drawing figures

WEST

End of Result Set

Generate Collection Print

L8: Entry 11 of 11 File: USPT Nov 28, 1995

DOCUMENT-IDENTIFIER: US 5470233 A
TITLE: System and method for tracking a pedestrian

Brief Summary Text (5):
This invention relates to map positioning hardware and software for presenting a user's geographical position by voice output. Specifically, this invention is a global positioning device for visually handicapped users. This device phonetically describes a geographical position by correlating coordinates from global positioning satellites to earth-bound locations or allows a user to navigate around a map without using the global positioning satellite.

Brief Summary Text (9):
There are twenty-four non-geosynchronous satellites circling the earth as part of a $12 billion Department of Defense location determination system. An accurate location can be determined by measuring the distance to at least three satellites. Since the signals produced by the satellites are not classified by the military, civilian companies have produced portable GPS receivers for determining exact locations on the earth. A GPS receiver can pinpoint a location on the earth to within about 100 meters. Using a technology called Differential GPS (DGPS), wherein fluctuations in the GPS location compared to a known true location are eliminated, an earth-bound location can be determined within about one meter. DGPS is a service provided by several vendors, wherein they broadcast GPS corrections on a sideband FM frequency. A user purchases a supplementary DGPS receiver that collects these corrections in real time.

Brief Summary Text (11):
In the commercial sector there are also several companies that have developed Microsoft Windows based electronic maps that accept GPS input. The Astia system from Liikkuva Systems International, (Cameron Park, Calif.) is an "executive" mobile computing system with integrated map that accepts GPS input. Astia includes a laptop computer that has a GPS satellite input and can continuously determine a user's position while driving along a street. A cursor shows the automobile's position on the map at any one time. An audio card can be purchased with the Astia system for verbally outputting the names of locations stored in the map database.

Brief Summary Text (18):
This invention includes a software program that runs a satellite geopositioning system primarily intended for people that are visually impaired. This software program is termed herein "Sextant". In a preferred embodiment, the Sextant software runs on the Microsoft Windows 3.1 platform. Sextant accurately determines a user's geographical location in a region using the GPS and then appropriately presents features of that location to the user verbally or through a Braille display. Importantly, the presentation of features describing each location is in a format that is appropriate for a blind pedestrian.

Brief Summary Text (21):
Different users can incorporate locations and features of particular importance into a user-defined map database. A user incorporates new locations into the user-defined database by appending GPS coordinates and corresponding features into the database. Finding the proper GPS coordinates for a new location can be done by retrieving GPS satellite information while standing at the new location. In normal operation, a user will stop at a new location that he wishes to make part of his user-defined map database. By taking a GPS reading at that location, and then typing the corresponding feature information into the laptop computer, a user-defined map database is created.

Detailed Description Text (5):
The present invention is a geopositioning system for the visually handicapped. The system utilizes the United States Department of Defense Global Positioning System

(GPS). The GPS is a series of twenty-four satellites that circle the earth in a non-geosynchronous orbit. These satellites emit signals that can be received and used to determine an exact distance from each satellite. By knowing the exact distance from at least three satellites, a system can calculate, with incredible accuracy, its position in three dimensional space. As shown in FIG. 1, the system of the present invention has several distinct components.

Detailed Description Text (6):
Satellites 1, 2 and 3 generate a signal that is received by a GPS receiver 5. These receivers are well known in the art, and can be purchased from companies such as Trimble Navigation (San Jose, Calif.). The Trimble Mobile GPSTM is a GPS interface for a notebook computer. A DGPS receiver 6 is linked to the GPS receiver 5 thereby gathering FM sideband signals indicating the GPS corrections that are broadcast by a DGPS antenna 7. The GPS receiver 5 interfaces with a Notebook computer 8 via a standard laptop PCMCIA slot. The GPS receiver transfers the corrected satellite signals into the notebook computer 8. The notebook computer preferably contains an INTEL 80486 microprocessor. The Sextant software of the present invention records the GPS longitude/latitude coordinates and compares them with a stored digital map. Digital maps, such as those available from Etak Incorporated, are well known in the art. Normally, a single map database covers a specific geographical region, such as California. A suite of maps is available that cover virtually the entire world.

Detailed Description Text (7):
The name of the map point nearest the retrieved satellite coordinate and appropriate for a blind pedestrian is retrieved. Any features, such as name, address or business hours are then sent to a voice synthesizer 10 which speaks the features. The voice synthesizer is preferably a DECtalk PC speech synthesizer. This is the most fundamental operation of the system. However, important to the correct operation for the blind is the choice of what the computer says once the location is known.

Detailed Description Text (76):
Enter a series of Geocoded points into a database as way points, points of interest, or a series of vertices of a polygon (Zone) to be tagged for reference.